EUROPEAN COMMISSION
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Lisbon Strategy and Policies for the Information Society
Lisbon Strategy and i2010

Use of Computers and the Internet in Schools in Europe 2006

Country Brief: Slovakia

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Key findings

Almost all Slovakian schools now use computers for teaching (99%) and have internet access (98%). However, only 40% use the internet via a broadband connection. With this figure Slovakia ranks at a low number 23 of the 27 countries participating in the survey. There is a large variation between school types: while only 31% of primary schools have a broadband internet connection, the penetration is highest among upper secondary schools, with 63% and vocational schools with 58%. There is also some variation with regard to broadband access between urban and rural areas: 62% of schools in densely populated areas have broadband access compared to only 32% of schools in thinly populated areas.

Only a very low 19% of the Slovakian schools using computers for teaching, use them in classrooms, with the highest – but still very low – percentage being achieved in vocational schools (22%). Only Hungary and Greece show even lower ICT usage figures in classrooms.

76% use ICT integrated into the teaching of most subjects, which is about the European average figure. The lower the school level the more one can find integrated ICT use in classes.

Slovakian teachers using ICT in class are rather frequent and intensive ICT users. Teachers in vocational schools use computers in class much more frequently than their colleagues in general education, with 63% using computers in more than a quarter of their lessons compared to 43% in primary schools.

They are also very active (90%) in searching for material themselves on the internet. This applies to teachers of all school types and shows a very proactive behaviour.

Older teachers (indicator used here: years of teaching experience) use ICT in class as frequently and intensively as younger ones.

A high 30% of teachers in Slovakia still do not use computers in class. When asked for the most important barrier, 49% state a lack of computers in their schools as the most important barrier followed by lack of adequate content and material which is stated by a high 32% of teachers and a high 21% stating lack of content in the national language as a problem.

Virtually all schools are equipped with at least some computers in Slovakia, but there is scope for further ICT-infrastructure improvements at Slovakian schools such as an increase of the number of computers in total and per pupil where Slovakia with 7 computers per 100 pupils ranks significantly below the European average and a move over to broadband where Slovakia currently ranks 23rd in Europe.

With 22% expressing the opinion that teachers lack the necessary skills to utilize computers in their teaching, Slovakia finds itself around the European average.

Only 3% of all and 10% of those not using ICT are not convinced of any benefits of using computers in class, which is a positive result, and lack of interest of teachers also does not seem to be a constraint

Slovakian teachers are very positive towards the different purposes for ICT use in teaching and achieve very high figures (well above the European average) on attitudes that ICT should be used in class by pupils for different purposes. This high level of ICT confidence is expressed by a very high number of teachers which brings Slovakia into the group of best performances on ICT competence of teachers based on their own assessments.

While ICT competence seems to be better than in several other countries (Slovakian teachers assess themselves as very competent in the use of ICT) and motivation of teachers does not seem to constitute a major problem, lack of ICT equipment and access to ICT does. This has been articulated by 32% of the teachers which is significantly higher than the European average of 21%. It is also confirmed by the very low numbers of computers per 100 pupils and the very small number of schools with broadband internet connection.

ICT Equipment and Internet in Schools

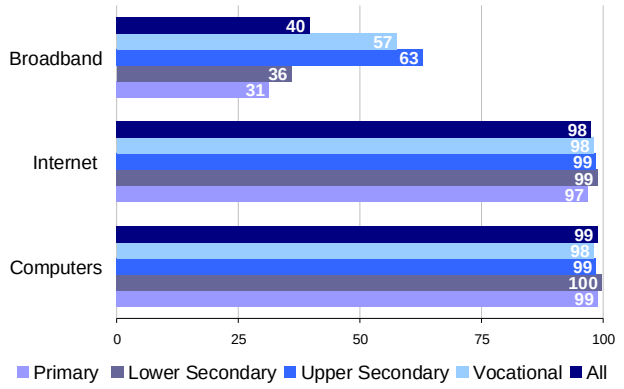
Almost all Slovakian schools now use computers for teaching (99%) and have internet access (98%). However, only 40% use the internet via a broadband connection. With this figure Slovakia ranks at a low number 23 of the 27 countries participating in the survey.

There is a large variation between school types: while only 31% of primary schools have a broadband internet connection, the penetration is highest among upper secondary schools, with 63% and vocational schools with 58%. There is also some variation with regard to broadband access between urban and rural areas: 62% of schools in densely populated areas have broadband access compared to only 32% of schools in thinly populated areas.

65% of schools have a website, 73% offer e-mail to teachers, and 24% do so to pupils.

Only a very low 19% of the Slovakian schools using computers for teaching use them in classrooms, with the highest – but still very low – percentage being achieved in vocational schools (22%). Only Hungary and Greece show even lower ICT usage figures in classrooms.

Percentage of Schools Using Computers, Internet Connection, and Broadband Internet Access According to School Type in Slovakia 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Computers: Q6; Internet, Broadband: Q9. See questionnaire for exact wording.*

Computers in the school libraries are basically non-existent and Slovakia finds itself at the tail end of European countries.

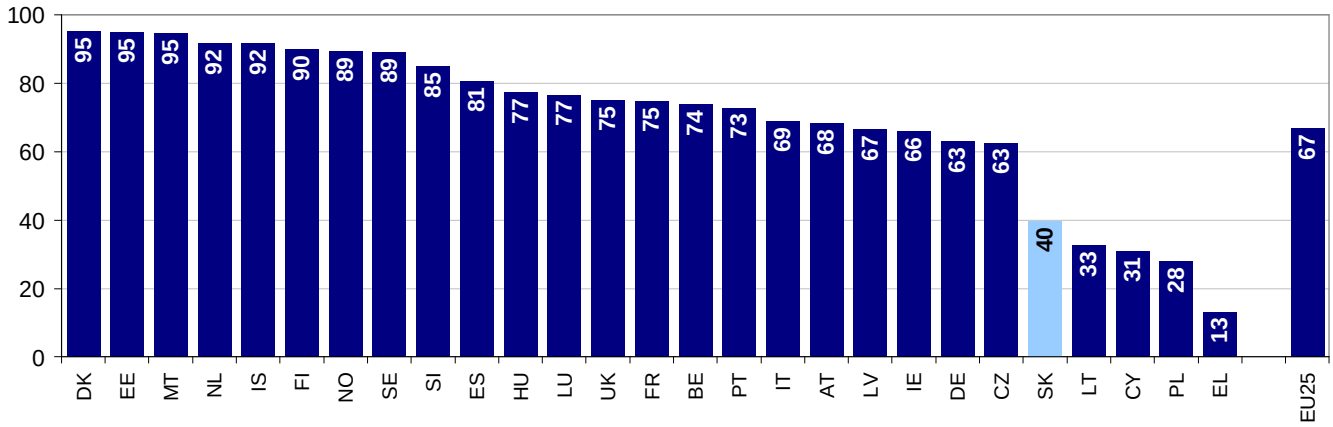
Those schools with a broadband connection to the internet are much more likely to have a more sophisticated ICT infrastructure including a school website, the use of a LAN or the availability of an intranet.

The use of Computers and the Internet in Schools

Computers are used for various purposes and as part of teaching different subjects in schools but also and very widely as a separate subject.

Computer sciences are taught as a separate subject in almost 74% of Slovakian schools. Highest figures are reached in upper secondary and vocational schools, where 91% of Slovakian head teachers report this to be the case.

Percentage of Schools with Broadband Internet Access in Europe 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Q9. See questionnaire for exact wording.*

ICT equipment in Slovakian schools 2006

				Educational Level (SK)				Type of locality (SK)			Internet Access (SK)	
	Total SK	Total EU25	Total NMS10	Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computers per 100 pupils [a]	6.7	11.3	7.1	5.4	5.0	8.3	9.2	6.2	6.3	7.4	6.8	6.7
... of which internet connected	5.8	9.9	6.4	4.9	4.5	6.9	7.4	5.2	5.5	6.5	6.1	5.8
Percentage of schools having...												
Computers for teaching [b]	98.9	98.7	96.7	98.9	99.7	98.6	98.0	97.8	99.2	99.0	100.0	100.0
Internet access [c]	97.5	96.2	94.7	96.9	98.8	98.6	98.0	96.7	98.6	97.4	100.0	100.0
Broadband internet access [d]	39.6	66.9	43.4	31.3	35.9	62.9	57.5	60.1	43.8	31.9	0.0	100.0
A website [e]	65.3	63.0	66.7	55.3	68.3	90.7	90.2	92.0	69.9	55.5	60.5	76.5
An e-mail address for the majority of teachers [f]	73.1	65.2	48.1	72.9	74.3	73.8	70.8	80.5	68.0	73.0	76.1	73.4
An e-mail address for the majority of pupils [g]	24.3	23.5	24.4	21.2	27.8	28.7	26.6	32.6	23.7	22.1	23.6	26.8
A LAN [h]	71.9	55.2	60.4	68.6	71.1	80.1	78.5	77.6	73.4	69.6	70.2	78.9
An intranet [i]	24.8	40.8	26.9	20.7	21.7	35.0	30.7	25.3	24.8	24.7	23.7	28.0
An external support or maintenance contract [j]	64.6	47.1	44.3	69.5	66.6	50.0	53.3	50.6	59.9	70.7	71.3	58.9
Percentage of schools using computers for education in...												
Computer labs [k]	89.1	80.5	94.6	87.6	89.3	92.4	90.3	94.3	86.7	88.5	87.5	91.4
Classrooms [l]	19.2	61.4	29.5	17.8	17.1	19.9	21.5	18.3	21.9	18.4	20.8	16.7
School library [m]	4.4	33.4	36.8	2.4	3.6	8.6	10.0	7.0	4.5	3.5	3.1	6.3
Other locations accessible for pupils [n]	14.9	27.0	20.2	14.1	16.2	18.9	16.8	19.0	15.3	13.5	13.9	16.4

Source: *LearnInd HTS 2006;* ***Base:*** *a: all pupils; b-j: all schools, k-n: schools using computers for educational purposes for pupils (cf. index b);* ***Question:*** *a: Q4, Q6, Q7; b: Q6; c: Q9; d: Q9; e-j: Q12; k-n: Q8. See questionnaire for exact wording.*

Use of computers in class in Slovakia 2006

Assessments of the head teacher		Total SK	Total EU25	Total NMS10	Educational Level (SK)				Type of locality (SK)			Internet Access (SK)	
					Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computer sciences taught as separate subject	Agree	73.5	54.7	91.2	66.3	74.7	91.4	91.2	90.0	73.3	68.7	69.6	79.6
	Disagree	26.5	43.7	8.4	33.7	25.3	8.6	8.8	10.0	26.7	31.3	30.4	20.4
	Don't know	0.0	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computers and the internet are													
integrated into teaching of most subjects	Agree	76.3	75.3	73.1	79.1	76.7	70.6	66.0	73.3	74.5	77.8	77.5	75.0
	Disagree	23.6	24.1	26.4	20.7	22.9	29.4	34.0	25.7	25.5	22.2	22.2	25.0
	Don't know	0.2	0.6	0.4	0.3	0.3	0.0	0.0	1.0	0.0	0.0	0.3	0.0
used for teaching traditional subjects or basic skills	Agree	65.5	75.8	72.3	69.7	63.3	56.0	57.4	64.0	68.1	64.8	67.0	62.6
	Disagree	33.1	22.8	26.0	29.4	35.6	41.0	40.3	31.5	31.9	34.1	32.7	34.4
	Don't know	1.4	1.4	1.7	0.9	1.1	3.1	2.3	4.5	0.0	1.1	0.3	3.1
used for teaching foreign languages	Agree	77.4	56.6	71.1	78.9	84.8	72.0	66.8	80.4	76.8	76.8	75.7	80.6
	Disagree	21.2	40.1	28.0	19.6	14.5	26.5	32.1	17.5	22.3	21.9	23.4	17.5
	Don't know	1.4	3.3	0.8	1.4	0.8	1.5	1.1	2.1	0.9	1.3	1.0	2.0
used for coping with students with special needs/ handicaps	Agree	57.4	71.7	58.3	62.3	67.3	43.4	47.4	56.6	59.2	57.0	60.5	53.4
	Disagree	37.3	23.7	31.6	32.9	28.3	48.9	46.1	34.0	38.4	37.9	35.0	40.5
	Don't know	5.2	4.6	10.1	4.8	4.4	7.7	6.6	9.4	2.5	5.1	4.5	6.1

Source: *LearnInd HTS 2006;* ***Base:*** *All schools using computers for educational purposes for pupils;* ***Question:*** *Q13: "To what extent do you agree or disagree with the following statements regarding the educational use of computers and/or the internet in your school*

76% use ICT integrated into the teaching of most subjects, which is about the European average figure. The lower the school level the more one can find and integrated ICT use in classes.

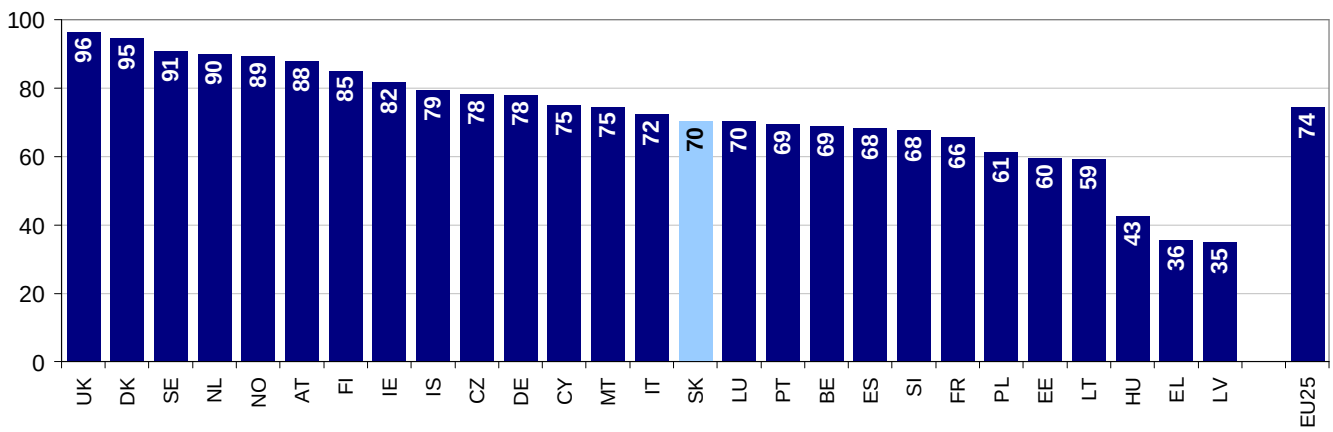
70% of Slovakian classroom teachers have used computers in class in the 12 months prior to the survey, with little variation across school types and between urban and rural areas. For most teachers, this includes not only using a computer for presentation purposes but also the use of computers by pupils in class.

Slovakian teachers using ICT in class are rather frequent and intensive ICT users. 36% of these teachers using computers use them in less than 10% of all lessons. More (44%) state that they use computers in more than a quarter of their lessons. Teachers in vocational schools use computers in class much more frequently than their colleagues in general education, with 63% using computers in more than a quarter of their lessons compared to 43% in primary schools.

Slovakian teachers using computers do not restrict themselves to a particular source of information but use a multitude of different material from a variety of sources for teaching purposes, which in most categories is above the European average. They are also very active (90%) in searching for material themselves in the internet. This shows a very proactive behaviour. This applies to teachers of all school types. The use of offline material such as CD ROMs is mostly practised in lower level schools with around 85% of the teachers in primary and lower secondary schools stating this to be the case.

Younger teachers in Slovakia are not necessarily the more frequent ICT user. Older teachers (indicator used here: years of teaching experience) use them as frequently and intensively. For all teachers with up to 20 years teaching experience the usage of ICT in more than a quarter of their lessons is around 46% which compares to 38% of the older teachers with more than 20 years teaching experience.

Percentage of teachers who have used computers in class in the last 12 months (2006)



Source: LearnInd CTS 2006; **Base:** All teachers; **Question:** Q7. See questionnaire for exact wording

Teachers' use of computers in class in Slovakia 2006

Percentage of teachers who …	Total SK	Total EU25	Total NMS10	Educational Level (SK)				Type of locality (SK)			Years of teaching experience (SK)			
				Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
...have used computers in class[1]	70.3	74.3	61.3	72.0	73.1	65.5	69.7	68.0	72.8	70.0	66.4	73.6	77.5	65.7
…use a computer in class to present or demonstrate	66.3	63.4	55.5	68.3	69.2	60.7	64.6	65.1	69.3	65.4	64.5	68.1	71.4	62.8
…have pupils use a computer in class	66.4	66.3	53.8	68.8	68.9	59.9	65.8	65.1	68.9	65.9	61.9	70.3	72.4	62.8

Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7 "How have you used computers and/or the internet for work in the last 12 months?"*

A high 30% of teachers in Slovakia still do not use computers in class. When asked for the most important barrier, 49% state a lack of computers in their schools as the most important barrier followed by lack of adequate content and material which is stated by a high 32% of teachers and a high 21% stating lack of content in the national language as a problem.

This results in a situation where the statement "lack of equipment in school" is expressed by a substantial 15% of all Slovakian teachers (30% non-users multiplied with 49% of teachers agreeing to this item).

At the same time virtually all schools are equipped with at least some computers in Slovakia, so that the above statement suggests that there seems to be some scope for further ICT-infrastructure improvements in Slovakian schools such as an increase of the number of computers in total and per pupil, where Slovakia with 7 computers per 100 pupils ranks significantly below the European average. With this result Slovakia belongs to the group of countries with schools least equipped with ICT.

With 22% expressing the opinion that teachers lack the necessary skills to utilize computers in their teaching, Slovakia finds itself around the European average. However, in lower level schools insufficient ICT skills are more an issue than in upper level schools.

Only 3% of all and 10% of those not using ICT are not convinced of any benefits of using computers in class, which is a positive result, and lack of interest of teachers also does not seem to be a constraint.

Frequency of computers use in class in Slovakia 2006

Percentage of all teachers *using computers in class* who …	Total SK	Total EU25	Total NMS10	Educational Level (SK)				Type of locality (SK)			Years of teaching experience (SK)			
				Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
…use computers in 5% and less of all lessons	16.8	18.5	15.0	16.3	15.9	17.6	15.3	15.1	21.6	15.3	10.7	17.3	18.2	17.9
in 6 to 10% of lessons	18.7	22.5	17.7	18.7	18.6	17.0	16.9	12.3	22.3	19.2	26.3	18.9	13.8	19.7
in 11 to 24% of lessons	21.2	22.2	22.1	22.9	21.7	15.7	15.3	25.9	15.3	22.3	17.1	17.0	22.1	23.7
in 25 to 50% of lessons	27.5	20.2	24.0	30.7	30.5	18.2	17.8	21.3	22.3	31.7	22.5	34.6	27.9	26.3
more than 50% of lessons	15.8	16.5	21.3	11.5	13.3	31.5	34.7	25.5	18.5	11.6	23.4	12.2	18.0	12.4

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class, "don't know" answers excluded;* ***Question:*** *Q9 "For what percentage of time have you used computers and/or the internet in class when teaching your main subject(s) in the past 12 months?"*

Source of educational material used in class in Slovakia 2006

Percentage of all teachers *using computers in class*[2] who …	**Total SK**	**Total EU25**	**Total NMS10**	**Educational Level**				**Type of locality**		
				Primary	**Lower secondary**	**Upper secondary**	**Vocational**	**Densely populated**	**Inter-mediate**	**Thinly populated**
…use material they have searched the internet for	89.8	82.7	81.8	90.4	92.4	89.1	87.1	91.6	90.2	89.1
…use existing online material from established educational sources	72.1	74.2	61.8	74.3	77.8	67.2	64.5	73.3	72.6	71.5
…use material that is available on the school's computer network or database	71.5	63.1	52.7	75.1	72.2	61.2	58.0	64.0	71.5	73.7
…use electronic offline material (such as CD ROMS)	82.2	83.0	82.2	84.8	84.1	76.3	71.7	78.4	82.5	83.2
…use other learning material when using computers in class	14.7	8.8	10.8	14.7	17.5	17.0	15.3	16.8	12.7	15.0

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class;* ***Question:*** *Q10 "Which of the following types of materials have you used when teaching your main subject(s) with the aid of a computer and/or the internet?"*

Barriers to computer use in class in Slovakia 2006

Percentage of all teachers ***not*** *using computers in class*	Total SK	Total EU25	Total NMS10	Educational Level				Type of locality		
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Lack of computers	49.0	48.8	49.0	46.8	47.7	51.7	40.7	57.4	48.6	46.4
Lack of adequate content/material	31.7	20.3	16.5	32.9	31.8	31.0	33.3	30.7	32.6	31.8
Lack of content in national language	20.6	8.6	5.7	21.7	22.8	19.5	20.3	16.1	21.7	21.7
Lack of adequate skills of teachers	22.1	22.5	9.8	24.3	24.2	17.3	13.0	12.6	17.3	27.1
No or unclear benefits	9.8	16.2	6.8	9.8	10.4	9.2	13.0	11.0	12.5	8.4
Lack of interest of teachers	4.8	8.9	3.3	4.3	4.8	6.9	5.6	1.9	4.8	5.8
Subject does not lend itself to being taught via computers	21.7	24.4	25.0	20.7	24.1	24.2	29.6	23.0	22.0	21.2
Other	29.3	21.3	20.3	31.5	29.7	26.4	25.9	23.2	32.5	30.1

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers not using computers in class;* ***Question:*** *Q12: "Why do you not use computers and/or the internet when teaching in class?"*

Attitudes on the Usefulness of ICT use in Teaching

Computers and the internet have arrived in Slovakian schools but still at a rather low level, with only 7 computers shared by 100 pupils.

The share of teachers in Slovakia – but also in the European Union in general – who believe that computers and the internet should not at all be used in schools, is very low and below 1%.

Slovakian teachers have positive attitudes about the different applications of ICT in teaching and achieve very high figures (well above the European average) on attitudes that ICT should be used for letting pupils do exercises and practise (95%), letting pupils retrieve information in a self-directed manner (94%) and for collaborative and productive work by pupils (92%). There are only minor differences across school types.

A large majority of Slovakian teachers (80%) also believes that teaching about office tools should be an integral part of the teaching process. With this figure, the country ranks significantly above the EU25 average figure. This attitude is most prominent among teachers in vocational schools (90%) and least prominent – but still at a very high level – in primary schools (77%). It is interesting that there is no common pattern across the European countries. In some countries (e.g. the UK, Norway, Iceland, Cyprus but also Spain) teachers in primary schools express this opinion much more strongly and to a larger extent compared to higher-level schools.

Access, Competence and Motivation for Using ICT and the Internet in Schools

Access

A majority of Slovakian teachers are more or less satisfied with the technical access means at their schools: 74% state that their school is well equipped with computers and 70% express the opinion that their internet connection is fast enough. However, a high 70% wish there were better support and maintenance actions taken. In terms of content 41% state problems with respect to finding adequate learning materials and 25% argue that existing materials are of poor quality.

Competence in using ICT

Slovakian teachers feel most and very competent ain using e-mail and using a text processor programme and less confident with downloading and installing software and with using presentation software packages. This high level of ICT confidence is expressed by a very high number of teachers, bringing Slovakia into the group of best performances on ICT competence of teachers based on their own assessments.

Attitudes on the Usefulness of ICT use in Teaching in Slovakia 2006

Percentage of teachers saying computers/internet should be used for …	Total SK	Total EU25	Total NMS10	Educational Level				Type of locality		
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Letting pupils do exercises and practise	95.3	79.9	78.8	95.4	95.2	94.4	95.5	94.3	94.1	96.1
Letting pupils retrieve information in a self-directed manner	94.1	85.0	87.8	93.8	95.4	94.8	93.8	93.6	97.1	93.1
Teaching about office tools	79.7	61.3	51.0	77.3	79.5	87.3	89.9	83.8	79.4	78.6
Collaborative and productive work by pupils	91.7	80.5	67.2	92.0	93.0	92.1	92.2	93.6	93.2	90.5
Computer/internet should not be used for any of these in teaching	0.3	0.6	0.5	0.4	0.2	0.0	0.0	0.0	0.0	0.5

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers;* ***Question:*** *Q13: "What do you think for what computers and the internet should be used for in teaching?"*

Teachers' access, competence and motivation for using ICT in class 2006

Percentage of teachers agreeing or strongly agreeing:	Total Sk	Total EU25	Total NMS10	Educational Level: Primary	Lower secondary	Upper secondary	Vocational	Subject of teaching: General primary	Literature and languages	Humanities and social sciences	Science, maths, computer sciences	Physical, artistic, crafts education	Vocational education
Access													
Our school is well equipped with computers [a]	73.8	74.2	76.5	74.4	73.3	72.8	75.7	78.3	76.5	71.4	71.6	77.2	76.2
The internet connection we have is sufficiently fast [b]	69.7	77.2	78.2	65.4	70.2	83.0	87.0	64.4	67.5	73.8	67.5	62.1	*82.8**
Better technical maintenance and support is required in our school [c]	70.3	64.8	64.6	69.5	71.5	72.5	70.4	64.9	69.6	74.3	69.8	72.4	80.6
Existing teaching materials on the Internet are of poor quality [d]	25.0	29.9	29.3	23.1	22.6	29.5	33.4	29.9	22.8	22.7	24.7	17.5	*36.5**
It is hard to find adequate learning materials for teaching [e]	41.0	38.7	30.5	39.3	41.0	44.7	48.2	38.1	40.6	35.3	41.3	39.0	*51.1**
Motivation													
Pupils are more motivated and attentive when computers and the internet are used in class [f]	86.7	86.3	90.1	87.8	87.6	83.9	86.0	85.4	86.3	85.9	86.4	89.8	83.9
Using computers in class does not have significant learning benefits for pupils [g]	5.0	20.7	9.5	5.7	5.4	3.6	1.7	5.2	5.6	5.0	3.9	5.6	6.0
Competence													
Teachers in our school do not have sufficient computer skills [h]	32.6	42.0	30.6	34.5	33.1	26.8	30.0	31.6	32.6	27.3	33.8	31.4	*39.2**
Competence / computer skills (Percentage of teachers who feel very confident at…)													
Using text processors [i]	81.6	65.0	63.2	79.0	81.3	88.0	88.8	71.2	76.5	79.5	84.2	78.2	*86.9**
Creating electronic presentations [j]	57.9	34.0	41.0	55.4	58.6	66.1	66.9	42.5	51.3	55.2	61.6	53.7	*71.2**
Using e-mail [k]	76.8	65.9	64.8	74.0	76.8	83.7	83.9	58.9	75.8	75.6	80.0	69.1	*73.7**
Downloading and installing software [l]	39.1	35.8	34.6	35.2	37.3	52.2	50.0	21.9	30.4	25.8	47.6	29.5	*44.6**

Source: *LearnInd CTS 2006;* ***Base:*** *a-h All teachers; i -l Teachers using computers in class* ***Question:*** *a-h Q14, i-l Q11.* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

Primary school teachers (35%) seem to be slightly less ICT competent than those in upper secondary (27%) and vocational schools (30%).

Motivation for ICT use in Schools

Over 87% of Slovakian teachers see significant learning benefits for pupils using computers in class and say that pupils are more motivated and attentive when computers and the internet are used in class. A very high 95% also believe that using ICT in class results in significant learning benefits for pupils.

ICT Readiness of Teachers – the ACM Model

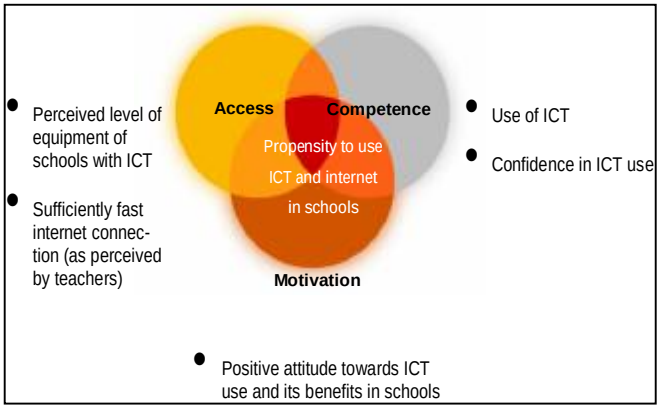
The ACM model as developed by Viherä and Nurmela (2001)[3] was applied in LearnInd to generate a typology according to the "propensity to the use of computers and internet by teachers in classroom situations at schools".

The typology in the figure below takes account of the three main categories of preconditions which need to be given for a school to make use of computers and the internet in the teaching process in classrooms, computer labs etc.

These are: access (to computers and the internet at school), competence (in using the computer software and the internet, and applying it for teaching purposes), and motivation (gauged through the attitude that using computers in classrooms results in significant learning benefits).

Any attempt to group the classroom teachers according to their propensity to becoming users of computers and the internet in their teaching processes needs to take account of these three dimensions. In the present application of the ACM model data from the Classroom Teacher Survey (CTS) was used. Therefore "access" for instance is to be understood as a perceived level of computer equipment at schools and teachers' satisfaction therewith rather than an objective measure of equipment status.

The Access-Competence-Motivation Model



38% of European teachers dispose of sufficient access to the internet at school, the necessary competence in using ICT in class and are motivated to its use. With 32% of the teachers belonging to this group, Slovakia ranks at 12th which places the country still in the top half of European countries. Overall the UK with 60% ranks top and Latvia with 15% finds itself at the very end.

The as yet insufficient internet connection in many schools and a lack of motivation of teachers for using ICT are the most critical issues for a wider uptake of computers and the internet in schools in Europe. 20% of European teachers indicate insufficient computer equipment and the low speed of internet connection at their school as a key barrier. 14% show a lack of motivation, i.e., they are of the opinion that using computers in class does not result in significant learning benefits.

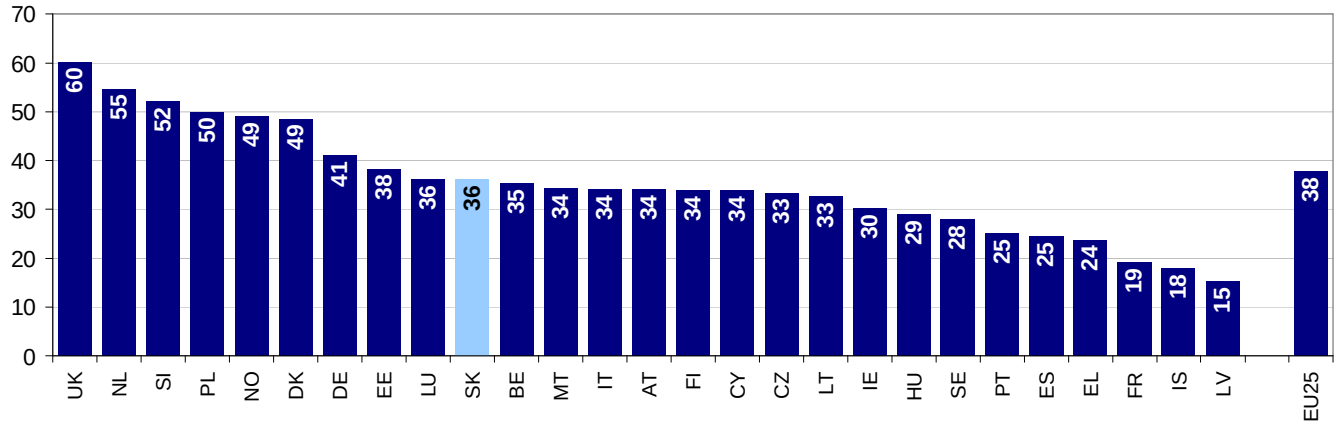
The situation in Slovakia is different. While ICT competence seems to be better than in several other countries (Slovakian teachers assess themselves as very competent in the use of ICT) and motivation of teachers does not seem to constitute a major problem, lack of ICT equipment and access to ICT does, since this has been articulated by 32% of the teachers which is significantly higher than the European average of 21%. Overall this results in a positive rank 9 on ICT readiness of teachers in Slovakia. However, one needs to bear in mind two things: first, the calculations of ICT readiness are based on self assessments and opinions of the teachers themselves, and second, there is hardly any difference between the ICT readiness of the countries ranking 9 to 18 – all of them are almost identical.

Access, Motivation and Competence of Teachers for Using ICT in Schools in Slovakia 2006

SK	EU25	Access	Competence	Motivation
3.1	4.3	~~Access~~	~~Competence~~	~~Motivation~~
1.7	3.9	**Access**	~~Competence~~	~~Motivation~~
6.6	9.7	~~Access~~	**Competence**	~~Motivation~~
6.0	5.0	~~Access~~	~~Competence~~	**Motivation**
9.3	13.7	**Access**	**Competence**	~~Motivation~~
4.9	4.8	**Access**	~~Competence~~	**Motivation**
32.3	20.7	~~Access~~	**Competence**	**Motivation**
36.0	37.9	**Access**	**Competence**	**Motivation**
100	100			

Percentage of teachers. ***Source:*** *LeanInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *See endnote* [4]

ICT Readiness of Teachers in Slovakia: Percentage of Teachers Fully Ready to use Computers in Class (ACM Indicator) 2006



Source: *LeanInd CTS 2006;* ***Base:*** *All teachers.* ***Question:*** *See endnote 5*

ANNEXES

Methodology Report

Universe / Sample population

In order to assure the comparability of school levels in all countries UIS-OECD-EUROSTAT "Mapping of national education programmes to ISCED 97 for school academic/year 2002/2003" [5] was used for composing the sample frame. Based on this, each country divided its school system into ICSED codes and made different combinations that existed in its country.

Sampling frame and method

The sample was composed using official databases, which contained contact data of schools. In the majority of countries the sample was drawn from a database received from the Ministry of Education.

For each country a separate template of sample frames was composed by TNS Emor. These templates contained data about school types across regions as well as location type. School types were defined based on the ISCED codes provided in UIS-OECD-EUROSTAT. Location type distribution was made according to the Eurostat type of locality classification which differentiates densely populated, intermediate and thinly populated municipalities[6]. Apart from that, each country was divided into 3-7 regions depending on the size of a country.

Based on the data provided by countries, TNS Emor composed quotas for each country. Two level stratification was used – quotas for first stage, random sample for second. The quotation for region by school type and location type was endorsed. Simple random selection was conducted by the local agency or the local source of the contact base. Both private and public schools were included in the sample. It was also obligatory to include schools of other teaching languages than the official language of a country in the sample.

Simple random sampling was used inside a quota cell. This means that if the quota for primary schools in region1 was 100 and the total number of primary school in this region was 800, then a random sample selection was be made among those 800 schools. This covered both private and public schools and schools of other teaching languages than the official language of a country.

No more than 50% of interviews could be made in one school level. At least 10% of respondents had to be from schools, which provided professional/vocational or combined programme of vocational and upper secondary level education (in case a country did not have special quota for those schools). It did not matter whether vocational education level was coded as ISCED 3 or ISCED 4.

There were no duplications in samples of head teacher and classroom teacher surveys. This was only allowed in countries with small universe sizes (e.g. Malta, Cyprus, Iceland, Estonia, Latvia etc) and in cases where the last quota cells were very difficult to achieve or there were not enough schools of a certain type. The priority was to include as many different schools as possible. In both surveys, 5 attempts were made before giving up and only if the respondent refused was this person not contacted again.

The CATI programme generated a randomly chosen letter. The interviewer asked for the person with a surname that started on the generated letter. If there was more than one teacher whose surname started with the selected letter, the person that was first alphabetically was chosen. If the correct person was not available, an appointment was made. At least 5 attempts were made before taking another teacher.

Only in Malta, due to instructions dictated by the Education Department, would the Head Teacher randomly select a teacher that would be available for an appointment during which they would be interviewed.

Number of interviews conducted (HTS / CTS)

Country		Head Teachers	Classroom teachers
BE	Belgium	450	807
CZ	Czech Republic	500	1000
DK	Denmark	315	848
DE	Germany	450	901
EE	Estonia	400	851
EL	Greece	500	1000
ES	Spain	518	1022
FR	France	501	869
IE	Ireland	403	626
IT	Italy	500	900
CY	Cyprus	150	600
LV	Latvia	451	902
LT	Lithuania	457	908
LU	Luxemburg	82	277
HU	Hungary	500	1000
MT	Malta	100	200
NL	Netherlands	515	890
AT	Austria	320	450
PL	Poland	500	1000
PT	Portugal	450	900
SI	Slovenia	253	460
SK	Slovakia	502	1000
FI	Finland	318	601
SE	Sweden	200	450
UK	United Kingdom	450	905
IS	Iceland	177	424
NO	Norway	494	708
TOTAL		**10456**	**20499**

Fieldwork

Fieldwork was coordinated by the TNS Emor and conducted in cooperation with its local TNS offices excluding Iceland, Cyprus, Austria, Slovenia and Malta where TNS does not have offices. In these countries partners with whom TNS had previous experience were used.

Pilot interviews prior to the regular fieldwork were conducted with 20 schools in both target groups in Estonia and Greece in February 2006, in order to test the questionnaire (structure, comprehensibility of questions).

Between March and April 2006, surveys among head teachers (head teacher survey - HTS) and classroom teachers (CTS) were carried out in 27 European countries. TNS Emor was responsible for the fieldwork.

Weighting schemes

After the fieldwork, weighting coefficients were computed using region, location type and school type.

Statistical accuracy of the survey: confidence intervals

Statistics vary in their accuracy, depending on the kind of data and sources. A "confidence interval" is a measure that helps to assess the accuracy that can be expected from data. The confidence interval is the estimated range of values on a certain level of probability of error. Confidence intervals for estimates of a population fraction (percentages) depend on the sample size, the probability of error, and the survey result (value of the percentage) itself. Further to this, variance of the weighting factors has negative effects on confidence intervals.

The calculation of confidence intervals is based on the assumption of (quasi-) infinite population universes. In practice, however, in some countries and for some school levels the complete population of schools consists of only several hundred or even a few dozen of schools. In some cases, literally each and every school within a country-school type cell was contacted and asked to participate in the survey. This means that it is practically impossible to achieve a higher confidence interval through representative school surveys in which participation is not obligatory.

Country Background Data

Slovakia has a population of 5,398 million inhabitants and still belongs to the somewhat smaller countries in Europe. 42 % live in rural communities, which is one of the highest rates across the Member States. The annual growth rate is small compared to most other EU countries.

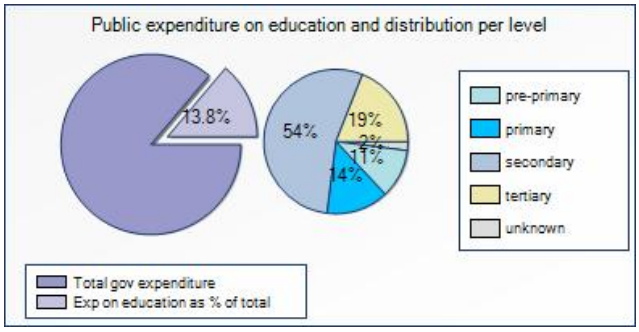
General Population Data for Slovakia 2002/03[7]

Total population (000)	5,398
Annual population growth rate (%)*	-0.2
Population 0-14 years (%)	18
Rural population (%)*	42
Total fertility rate (births per woman) *	1.2
Infant mortality rate (0/00) *	8
Life expectancy at birth (years) *	73
GDP per capita (PPP) US$ *	12,940
GDP growth rate (%)*	4.4
* World Bank World Development Indicators	

Resources for Education in Slovakia 2002/03

Pupil / teacher ratio (primary)	18
Public expenditure on education :	
as % of GDP	4.4
as % of total government expenditure	13.8
Distribution of public expenditure per level (%):	
pre-primary	11
primary	14
secondary	54
tertiary	19
unknown	2

Resources for Education in Slovakia 2002/03



The Educational System in Slovakia[8]

As of 31st December 2003, the number of people aged 29 or under was 2,297,670 (42.7% of the total population). The number of children of compulsory school age (6-15 aged) was 777,694 (13.2% of the total population). The official language of instruction is Slovakian and, in certain regions, the language of the minorities (Hungarian, Ukrainian, German or Bulgarian).

Most pupils and students (in 2003/04 school year 95.2% of all full-time pupils and students from pre-primary through to tertiary level) attend public-sector schools that are directly administered and organised by the public authorities. The area of competence, organisation and tasks of the bodies of state administration in education (except higher education), municipalities, regions and the bodies of self-government in education are laid down by the Act No 596/2003 of the Law Code on state administration and self-government in education. The Act on the funding of primary and secondary schools and educational establishment No 597/2003 came into validation on 1st January 2004.

As a central body of state administration the Ministry of Education of the Slovak Republic governs the execution of state administration in education and controls its execution. Above all it determines the network of education establishments, principles of pedagogical management in schools, it works out bills and the concept of the development of the education system.

General administration at regional level is represented by the regional school offices (there are 8). Their seats and territorial area of competence are identical with the seats and territorial area of competence of the self-governing regions. General administration at the local level is within the competence of municipalities. As regards the responsibility for organising schools and the use of financial resources, only individual establishments with status of legal

entity have decision-making powers. Only State inspectors have responsibility for the task of educational inspection, the supervision of head teachers and the external assessment of schools.

The use of ICT in Education[9]

The Slovak Republic strives intensively for utilisation of information and communication technologies at schools in order to strengthen utilisation of ICT in the education process and at the same time to provide for ICT serving the public, which is in accord with the principle of an open school.

Through the INFOVEK programme schools were not only equipped with computers and internet access, but were also provided with software education packages, used in the education process. A part of these processes is a large-scale training initiative addressed to teachers of primary and secondary schools in order to provide them with the ability to make use of ICT in the education process. The so-called "ICT classrooms" are being created, utilising the ICT environment in the education process interactively. The process for the creation of a higher education information network was concluded. It is now providing high speed connection together with entry to the world information and library databases.

The Study

There is a lack of information on the actual use of ICT for learning in schools and for supporting political action in potential future programmes. It is necessary to clarify matters such as the educational vision of heads of schools, the current impact of ICTs on teachers' practice, support and training and on other factors for success in e-learning.

The objective of the study is to obtain estimates for the eEurope 2005 indicator on e-learning "number of pupils per computer with Internet connection (broadband/non-broadband)" and relate it to other possible indicators of educational use of ICT in compulsory education (e-learning in schools). The study looks at how Information and Communication Technologies (ICT) are used in schools.

The study is a continuation of the earlier benchmarking exercise for eEurope 2002.

It involved two surveys. Firstly of head teachers to obtain information on the schools and then of teachers to focus on their use of ICTs in the teaching process

This exercise is part of the Information Society monitoring and benchmarking process for which the Commission in cooperation with the Council defined benchmarking indicators.

Country Briefs

This document has been prepared by **empirica** based on own desk research and the above mentioned primary data sources: Head Teacher Survey (HTS) 2006 and Classroom Teacher Survey (CTS) 2006 in the EU25 member states, Iceland and Norway.

Altogether 27 LearnInd Country Briefs are available in a common format, one for each member of the enlarged European Union, Norway and Iceland.

A final report has also been developed. It includes approximately 100 exhibits, more than 250 data tables and a report about the key results.

You can access and download these documents in PDF format (for free) from http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm.

More information

Check our results and achievements on: http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm. If you wish to be provided with more details, or to receive news and updates, please contact us at: **learnind@empirica.com** or get in touch with us.

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1 Note that "in class" means during lessons while teaching and does not denote a particular location such as a classroom.

2 Base (100%) = all teachers who have used a computer in class in the last 12 months.

3 Viherä, M-L, Nurmela, J (2001) "Communication Capability Is an Intrinsic Determinant for Information Age", in Futures, Volume 33, Issue 3-4:245-265.

4 Synthetic indicators: Access: Q14 (2) "Our school is well equipped with computers" and Q14 (3) "The internet connection we have is sufficiently fast ".

Competence: Q11 How confident do you feel... a) using a text processor, b) creating a presentation c) using e-mail, d) downloading and installing software. Threshold: Average of 2.5 or more on a 1-4 confidence scale

Motivation: Q14 (8); disagree with "Using computers in class does not result in significant learning benefits".

For full question wordings refer to questionnaire.

5 http://forum.europa.eu.int/Public/irc/dsis/edtcs/library?l=/public/unesco_collection/programmes_isced97&vm=detailed&sb=Title

6 Densely populated area refers to a set of closely related local units, each one of which having a density greater than 500 inhabitants per km2, and the total population of which being of at least 50 000 inhabitants; Intermediate area refers to a set of closely related local units that do not pertain to a densely populated area, each one of which having density greater than 100 inhabitants per km2, and where the total population is at least of 50 000 inhabitants or it refers to a set that is adjacent to a highly populated area. Thinly populated area (rural): refers to a set of closely related local units that are not part of a densely populated area, or of an intermediate area. (A set of local areas totalling less than 100 km², not reaching the required density, but entirely enclosed within a densely-populated or intermediate area, is to be considered to form part of that area. If it is enclosed within a densely-populated area and an intermediate area it is considered to form part of the intermediate area).

7 Source: http://www.uis.unesco.org/profiles/selectCountry_en.aspx (visited 28 March 2006)

8 Source: http://www.eurydice.org/Documents/struct2/frameset_EN.html (visited: 28 March 2006)

9 Source: http://europa.eu.int/comm/education/policies/2010/nationalreport_en.html (visited: 9 May 2006)